

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 08 JUN 2005



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Applicant's or agent's file reference TS 6443 PCT	<b>FOR FURTHER ACTION</b>  See Form PCT/IPEA/416	
International application No. PCT/EP2004/050856	International filing date (day/month/year) 19.05.2004	Priority date (day/month/year) 21.05.2003
International Patent Classification (IPC) or national classification and IPC E21B10/32		
Applicant SHELL INTERN. RESEARCH MAATSCHAPPIJ B.V. et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ sent to the applicant and to the International Bureau a total of 2 sheets, as follows:
    - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
  - ☒ Box No. I Basis of the opinion
  - ☐ Box No. II Priority
  - ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - ☐ Box No. IV Lack of unity of invention
  - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - ☐ Box No. VI Certain documents cited
  - ☒ Box No. VII Certain defects in the international application
  - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand  10.02.2005	Date of completion of this report  06.06.2005
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Stroemmen, H.  Telephone No. +49 89 2399-7345  

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/050856

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-10 received on 25.05.2005 with letter of 25.05.2005

**Drawings, Sheets**

1/3-3/3 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 3

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 3 are so unclear that no meaningful opinion could be formed (*specify*):

**see separate sheet**

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	
	No: Claims	1-9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

- III-1 Claim 10 does not specify explicitly and univocally any technical features, and can therefore not be examined. Furthermore, said claim contains references to the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here. See also Guidelines PCT/GL/ISPE/1, 5.10.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability**

- V-1 The present application does still not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. The document D1 discloses on page 3, lines 25-33 and page 10, lines 18-23 cutter support means that provides relief to the pivot pin against rotational and axial loads.
- V-2 Additionally D2 also discloses all the features of at least claim 1. See D2, fig. 2, item 15 which provides both axial and rotational support against the cutters. Claim 1 is therefore also not new over D2 (Article 33(2) PCT).
- V-3 D3 also discloses the subject-matter of claim 1. See fig. 2, items 123, 22, 33. Claim 1 is therefore also not new over D3 (Article 33(2) PCT).
- V-4 What has been said about the dependent claims in previous communications is still considered to be valid.

**Re Item VII**

**Certain defects in the international application**

- VII-1 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

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REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

**PCT/EP2004/050856**

- VII-2      Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D3 is not mentioned in the description, nor are these documents identified therein.
- VII-3      The description is not in conformity with the claims as required by Rule 5.1(a)(iii) PCT.

25. 05. 2005

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1. Drill bit for drilling a borehole in an object, the drill bit having a central longitudinal axis and comprising a bit body provided with a central shank for connecting the drill bit to a drilling system, the drill  
5 bit further comprising at least one cutting arm, each cutting arm being provided with a set of cutters for cutting the object and being coupled to the bit body via pivot means allowing the cutting arm to pivot between a radially retracted position and a radially expanded  
10 position, the drill bit being provided with support means for supporting the cutting arm in the radially expanded position thereof, wherein the support means is arranged to transmit at least a portion of the rotational torque generated during drilling from the cutting arm to the bit  
15 body so as to reduce or prevent transmission of said rotational torque via the pivot means, and wherein the support means is arranged to transmit axial loads from the cutting arm to the bit body when the cutting arm is in the radially expanded position,  
20 characterized in that said axial loads are transmitted from the cutting arm to the bit body by an axial end surface of the bit body.

2. The drill bit of claim 1, wherein the support means is further arranged to transmit an axial compressive load  
25 from the cutting arm to the bit body.

3. The drill bit of claim 1 or 2, wherein the support means is further arranged to support a radial compressive load from the cutting arm to the bit body.

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4. The drill bit of any one of the previous claims, wherein the support means is arranged to transmit a majority of the rotational torque, preferably essentially the full rotational torque, from the cutting arm to the bit body.

5. The drill bit of any one of the previous claims, wherein the cutting arm is additionally pivotable to an intermediate position, in which intermediate position a second set of cutters is arranged in a second cutting position with respect to the object for drilling a borehole with a smaller gauge than in the expanded position.

6. The drill bit of any one of the previous claims, further comprising a pilot section provided with pilot cutters arranged for pre-cutting a pilot borehole ahead of the cutting arm.

7. The drill bit of claim 6, wherein the pilot section is axially movable with respect to the shank whereby the cutting arm is coupled to the pilot section for controlling the pivoting of the cutting arm.

8. The drill bit of claim 7, wherein the pilot section is coupled to a hydraulic system for controlling said axial movability.

9. The drill bit of any one of claims 1-8, wherein the drill bit is a drill bit for drilling a borehole in an earth formation.

10. The drill bit substantially as described hereinbefore with reference to the accompanying drawings.